# **UC Agriculture & Natural Resources**

**Proceedings of the Vertebrate Pest Conference** 

# Title

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Permalink https://escholarship.org/uc/item/58g90831

**Journal** Proceedings of the Vertebrate Pest Conference, 21(21)

## ISSN

0507-6773

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**Publication Date** 2004

eScholarship.org

# The Office of Spill Prevention and Response – Applying Bird Hazing Techniques in Oil Spill Situations

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ABSTRACT: This paper provides historical background on the Office of Spill Prevention and Response (OSPR) and describes the functions and capabilities of the Hazing Group within OSPR with regard to protecting wildlife during oil spills. In response to the oil spill disasters of the tankers Exxon Valdez in Alaska and the American Trader in California, legislators in 1990 created OSPR within the California Department of Fish and Game and gave OSPR substantial authority to oversee spill clean-up, natural resource damage assessment activities, and wildlife protection activities. In view of the potential for high bird mortality during a spill event and the high costs for rehabilitation, OSPR established the Hazing Group with the goal of preventing birds from becoming exposed in the event of a spill. The primary responsibilities of the Hazing Group are to: 1) improve and maintain preparedness and hazing response capabilities for spill events, 2) obtain or provide training and training materials on hazing techniques and strategies, spill response procedures, and other related subjects both for wildlife hazing unit members and other appropriate OSPR responders, and 3) conduct and review research on wildlife hazing techniques and strategies appropriate for spill events. With regard to response capabilities, the Hazing Group is on call 24 hr/day, acquired and maintains an inventory of pyrotechnics and other hazing equipment, has a cargo trailer on stand-by loaded with equipment and supplies sufficient for several days, and assembled a collection of California coastline maps useful for response planning. Training required for Hazing Group personnel includes HAZWOPER certification with an annual refresher course. Other training includes an annual Incident Command System class and participation in drills and exercises. A hazing manual is under development as training material for Hazing Group and other OSPR. personnel. The Hazing Group conducted a literature review of research on bird hazing techniques and produced an annotated bibliography on bird hazing techniques applicable to oil spills. As oil spills are relatively short-lived events, techniques with only short-term effectiveness may still be sufficient for hazing birds.

KEY WORDS: bird hazing, California, oil spills

### **HISTORICAL BACKGROUND**

Concern about the impact of oil spills on natural resources has greatly increased, especially after the Exxon Valdez spill in 1989 that released 41 million liters (10.8 million gallons) of crude oil in Prince William Sound, Alaska (Murphy et al. 1997). This event demonstrated the high vulnerability of waterbirds from exposure to spilled'oil. After the spill over 30,000 bird carcasses were recovered and preliminary estimates of total mortality ranged from 100,000 to 300,000 birds (Piatt et al. 1990). Subsequent estimates based on simulation models estimated total mortality of 375,000 to 435,000 birds (Ecological Consulting, Inc. 1991). Great effort and monetary resources were expended to clean, rehabilitate, and release oiled birds. Unfortunately, with the techniques available at that time, probably less than 1% of the oiled birds were saved by cleaning. Concern about spills heightened in California in 1990 when the tanker American Trader spilled 1.6 million liters (416,000 gallons) of crude oil 1.6 km off Huntington Beach, killing an estimated 3,400 seabirds (Carter 2003).

In response to the Exxon Valdez and the American Trader disasters, California legislators passed the Lempert-Keene-Seastrand Oil Spill Preventions and Proc. 21<sup>st</sup> Vertebr. Pest Conf. (R. M. Timm and W. P. Gorenzel, Eds.) Published at Univ. of Calif., Davis. 2004. Pp. 287-290.

Response Act (SB 2040) in September 1990. This act created the Office of Spill Prevention and Response (OSPR) within the California Department of Fish and Game. The act gave OSPR substantial authority, in coordination with the U.S. Coast Guard, to direct spill response, and to oversee spill clean-up, natural resource damage assessment activities, and wildlife protection activities.

# OFFICE OF SPILL PREVENTION AND RESPONSE

The mission of OSPR is to protect California's natural resources by preventing, preparing for, and responding to spills of oil and other hazardous materials, and by restoring affected resources. To undertake both prevention and response functions, OSPR is divided into several branches including the Enforcement Branch, the Legal Branch, the Marine Safety Branch, and the Scientific Branch.

The functions of the Scientific Branch include both prevention and response aspects. The Scientific Branch conducts surveys and inventories of marine resources and habitats, evaluates new spill response techniques and response options, provides input on natural resources at risk to federal, state, and local area spill response plans, and reviews area contingency plans. The Scientific Branch oversees the operation of a coastal network, the Oiled Wildlife Care Network, for wildlife rescue, cleaning, and rehabilitation during a spill. The Scientific Branch also manages the Marine Wildlife Veterinary Care and Research Center to address the rescue and rehabilitation of oiled sea otters (*Enhydra lutris*).

Another activity overseen by the Scientific Branch that incorporates both prevention and response is the hazing of wildlife. Due to the potential for high mortality to waterbirds during a spill event and the high costs for wildlife rehabilitation and waterbird restoration projects, the Hazing Group was established with the goal of preventing birds from becoming exposed in the event of a spill and minimizing wildlife casualties.

In the event of a spill, the Scientific Branch participates with other agencies and organizations in the response decision process following the Incident Command System (ICS). Within the structure of the ICS, wildlife-related operations are grouped in the Wildlife Branch. Five groups serve under the direction of the Wildlife Branch Director: Wildlife Reconnaissance Group, Wildlife Recovery and Transportation Group, Wildlife Processing Group, Veterinary Services Group, and the Hazing Group.

## HAZING GROUP

The duties of the Hazing Group are described and provided for in the Area Contingency Plan for the State of California. This plan is required under the U.S. Oil Pollution Act of 1990. The Hazing Group is directed by the Hazing Group Supervisor. The Group Supervisor is responsible for minimizing wildlife impact and losses during spill responses.

Since July 2000, OSPR has contracted with the University of California, Davis (UCD), to manage the hazing program, respond to spill events if hazing is required, and to provide other hazing-related products. Activities undertaken to accomplish these objectives relate to three general topics: preparedness, training, and research.

## Preparedness

The Hazing Group is on call 24 hr/day and must be capable of responding to a spill as quickly as possible. Several factors have been addressed to meet the need for quick response. Hazing equipment (e.g., propane cannons), that formerly was stored in several locations around California, is now stored at a central location at UCD. A sizeable inventory of pyrotechnics, propane cannons, propane tanks, and other materials has been acquired (Table 1). The quantity of hazing supplies available allows the Hazing Group to arrive on scene and promptly begin hazing activities, without the need to request acquisition of additional supplies.

As required by California Fire Code, the pyrotechnics are stored in a portable magazine. The magazine meets the U.S. Bureau of Alcohol, Tobacco, and Firearms requirements for both a Type II indoor storage magazine and Type III day box. The magazine, because it has wheels, can quickly be moved from the storage area into

a vehicle or trailer for safe and legal transport to the staging area of the spill.

\*

Table 1. Hazing materials in the inventory of the OSPR Hazing Group.

Item	Quantity
Bird bombs	1,600
Screamers	1,400
Record launchers	11
.22-caliber blanks	3,200
Shell crackers	300
Shotgun	1
CAPA exploders	50
CAPA launchers	- Child field
Seal bombs	70
Propane cannons	15
Mylar balloons	500
Helium tanks (3.8 m <sup>3</sup> each)	2
Bamboo stakes with mylar tape	200
Marine Phoenix Wailers	2

The Hazing Group inventory includes a  $1.5 \times 2.4$ -m (5  $\times 8$ -ft) enclosed cargo trailer. The trailer has been outfitted with shelves and tie-down points to both maximize storage capacity and to properly secure the cargo. To reduce response time the trailer has been prepacked with hazing equipment, tools, and personal protective equipment. At the time of call-out, the magazine, helium tanks for mylar balloons, and shotgun(s) would quickly be loaded in pre-designated spaces.

Other items intended to improve response time include the "arming" of 200 bamboo stakes each with two 1-m strips of mylar tape. The stakes with mylar have been bundled into packets of 10 stakes for easy handling and rapid deployment in the field. Several official forms have been copied and completed to the extent possible, including shipping papers required by the California Department of Transportation, and two ICS forms, the Assignment List and the Status Change forms. A list of vendors selling hazing supplies, primarily in California, has been prepared. The list would be available to Logistics Section Supply Unit personnel at the Incident Command Post as an aid to processing any requests for additional hazing materials.

A collection of maps for the entire coastline of California has been assembled. The maps were printed from Environmental Sensitivity Index (ESI) files available on CDs from the National Oceanic and Atmospheric Administration, Office of Response and Restoration. The maps include coastal and near-shore habitats (e.g., rocky cliffs, sand beaches, tidal flats, wetlands), biological resources for birds and marine mammals (e.g., nesting sites, haul-out sites, seasonal abundance), and human-use features (e.g., marinas, archaeological sites). The ESI maps would serve as important references in the initial hazing response planning prior to arrival on-scene.

### Training

Training is an essential component of any bird hazing program. Personnel must be trained in the safe and proper use of bird hazing equipment, particularly pyrotechnics. To that end, an in-house training session on the pyrotechnics in the Hazing Group inventory was conducted. The training included both classroom lecture and discussion and hands-on firing of the various pyrotechnics in the field.

In addition to classroom and hands-on training, a hazing manual is under development. The manual will provide descriptions of the hazing materials in the Hazing Group inventory and information on how, when, and where to apply the various techniques. The manual is intended to be a field reference for Hazing Group personnel but may eventually serve as a classroom manual in a training course for other OSPR personnel.

Due to the unique and potentially hazardous environment of a spill, all personnel responding to a spill, including Hazing Group members, must receive Hazardous Waste Operations and Emergency Response (HAZWOPER) training and certification. HAZWOPER training covers various topics including recognition, identification, and characteristics of hazardous materials, emergency response, site safety plans, air monitoring instrumentation, safe work practices, respiratory protection, protective clothing, and decontamination procedures. Hazing Group personnel must complete the 24-hour HAZWOPER course in order to be permitted access to a spill. An 8-hour refresher course is required annually to maintain certification.

Hazing Group personnel are required to attend, at least once annually, a training session on the ICS. The ICS is used to manage an emergency incident, such as an oil spill. The basic course is intended to acquaint personnel with the ICS structure and terminology. To reinforce the ICS training, Hazing Group personnel are required to attend drills and exercises. Drills, which may be unannounced, simulate various spill scenarios. Most drills are desktop exercises intended not only to address response options and decisions, but also to familiarize personnel with their duties and responsibilities and the functioning of the ICS.

#### Research

Research is employed by the Hazing Group primarily as a means to evaluate wildlife hazing techniques that have application to spills and species likely to occur at spill locations. This evaluation is accomplished mainly through review of the literature and maintenance of a library on wildlife hazing. Field research may also be conducted as funding becomes available.

One product of the literature review has been an annotated bibliography on bird hazing techniques and strategies applicable to oil spill response (Gorenzel et al. 2003). Bird hazing and deterrent techniques are widely employed to disperse and exclude birds from croplands, aquaculture facilities, and airports, and reports in the literature are commonly available. However, due to the relative rarity of large oil spills and coordinated bird hazing, published research or even accounts of the efficacy of these bird hazing techniques at spills are

uncommon. Thus, studies at inland or terrestrial sites (primarily croplands, aquaculture facilities, and airports), lakes, rivers, wetlands, and toxic containment ponds discussing techniques that could have application at a spill or species that could occur at a spill (e.g., cormorants at a fish farm could also occur at a coastal bay) are the primary sources of information. In addition, literature on bird response to disturbance (e.g., waterfowl response to recreational boating) provides useful information. Boats, for example, are a useful hazing tool in themselves and also serve as a platform for launching pyrotechnics. Knowledge of the responses of different species to boats in a hazing situation can be inferred from observed responses in recreational or other settings.

In reviewing research, one should keep in mind similarities and differences in the goals of bird hazing at an oil spill versus other locations. For example, both an airport and a coastal bay could be large areas encompassing hundreds of hectares. Ideally, hazing techniques at both locations should have a large area of effectiveness. However, at an airport, even though shortterm effectiveness is required, long-term deterrence is Habituation over time (failure to more important. respond) to hazing techniques used at airports is of great concern. On the other hand, a spill event is relatively short-lived and transient in location, resulting in less concern about habituation. Thus, techniques that may not be recommended at an airport may be suitable for the short-term at a spill site.

The use of mylar tape is a good example of a technique that may not be valued for long-term control but merits consideration for short-term control. Mylar tape is commonly used in vineyards in California to deter bird pests, primarily European starlings (Sturnus vulgaris), house finch (Carpodacus mexicanus), and American robins (Turdus migratorius). It is generally thought that mylar tape may initially be effective, but that birds habituate to it within a few days (P. Gadd, Sonoma County Agric. Comm., pers. commun.). Mylar tape thus would not normally be considered for long-term bird control in a vineyard. However, the short-term effectiveness of mylar tape would be useful at an oil spill. In the initial response to a spill, bamboo poles with mylar streamers could be deployed rapidly along shorelines, mudflats, and other locations used by birds. Although it may be effective for only a short time (e.g., 1 to 3 days), the mylar would "buy time" at the initial phases of hazing operations when personnel might be in short supply and large areas require coverage. When habituation occurs, another hazing technique could be introduced to replace or reinforce the mylar.

## FUTURE OUTLOOK

Since the inception of OSPR in 1990, there have been at least 23 significant spills in California (Office of Spill Prevention and Response 2003), with 3 spills occurring since the formation of the Hazing Group in 2000. Many spills do not require bird hazing and to date the Hazing Group has not yet been called to a spill. However, given the volume of shipping traffic into major ports such as Long Beach and San Francisco, the presence of offshore oil rigs in southern California, and refineries in several ports where tankers offload petroleum materials, a spill event requiring bird hazing is certain to occur in the future. To meet that event, the Hazing Group intends to increase preparedness through continued training, acquisition of hazing and other necessary materials, and research to evaluate the efficacy of new techniques (e.g., lasers) on marine birds.

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